Please cancel claims 5-8 without prejudice to pursuance of same in a suitable continuing application.

REMARKS

The title has been changed to make it more descriptive, as requested. In the event that the Examiner would prefer alternative wording, the applicants will be receptive to suggestions.

Typographical errors on pages 2 and 9 and in claim 2 of the application as filed have been corrected. On page 2, the spelling of "close" has been corrected. On page 9, and in claim 2, an error apparently made in the translation of the PCT application has been corrected. As seen from page 24, line 16 of the priority application, the term in Equation II was "$y \leqq \mathbf{4}2x^{-0..6}$, " but in the translation it was erroneously carried over as "$y \leqq \mathbf{5}2x^{-0.6}$." Emphasis added. An extra copy of page 24 of the PCT application is enclosed herewith for the Examiner's consideration. Similarly, the expression formerly found in claim 2, which has now been incorporated into claim 1, has been changed from "$y \leq 4\mathbf{d}x^{-0..6}$" to -- "$y \leq 4\mathbf{2}x^{-0..6}$." The present amendment corrects these oversights. No new matter is added by these corrections.

Claim 1 has been amended to incorporate the corrected expression from claim 2, as described above. Claim 4 has been amended to correct its dependency. Claims 5-8 have been cancelled without prejudice.

Claims 1-8 stand rejected under 35 U.S.C. § 112, first paragraph, as non-enabled by the specification. This rejection is respectfully traversed. The Office Action questions whether the "Determination of graphite material" on page 9 of the specification is enabled, based on the recitation of step (iv) in which graphite material is subjected to Raman spectroscopic analysis, to determine certain values. The Office

action assumes that in step (iv), particles are sorted by their Raman spectrum characteristics. However, that is not the case. The "graphite material satisfying the above relation between an average particle size and a specific surface area is subjected to Raman spectroscopic analysis using 5,145 Å Argon ion laser light to select the material whose R value * * *falls within the range of 0.001 to 0.2." Emphasis added. It is not individual particles which are analyzed and sorted but samples of the previously described graphite materials which are subjected to the spectroscopy, and those materials are evaluated in accordance with the preferences listed. The materials tested are not individual particles, but are made up of many particles having an average particle size and specific surface as determined by standard testing methods. It is believed adequately described in the specification, but if the Examiner wishes any clarifying language without changing the meaning of the original disclosure, the applicants will be pleased to make such clarifications.

Claims 2 and 4 were rejected under §112, second paragraph, for failure to define "d" in the above- quoted expression. The expression has been corrected as noted above, and the term "d" has been eliminated. Moreover, claim 2 has been incorporated into claim 1. Since claim 4 no longer depends on a claim having the erroneous expression, the rejection of claim 4 has likewise been overcome.

With regard to claim 3, the Action states "a half width of a Raman spectrum peak is indefinite because it is recited as a unitless number. Thus the magnitude of the half-width is unknown." Claim 3 has been amended to recite the dimension in question. Basis for the amendment is found at page 9, last line, to page 10, line 9, particularly at line 9.

Accordingly the language objected to has been clarified, and it is respectfully requested that this rejection be withdrawn.

Claims 1 and 2 stand rejected under 35 U.S.C. § 102(b) as anticipated by Omaru et al. (US Patent 5,561,005)("'005"), with evidence shown in Omaru US Patent 5,639,575 ("'575") and Fauteux U.S. Patent No. 5,512,392 ("'392"). Claims 1, 2 and 4-6 stand rejected under 35 U.S.C. § 102(e) as anticipated by Yamada et al. (U.S. Patent No. 5,776,610)("'610"). These rejections are respectfully traversed.

One aspect of the present invention is to provide a lithium ion secondary battery comprising a positive electrode, a non-aqueous electrolyte, a separator and a negative electrode comprising a carbon material capable of charging and discharging lithium ions, said negative electrode containing at least one type of graphite material which satisfies the following conditions (a) and (b):

(a) when the BET specific surface area of the graphite material is represented by y (m^2/g) and the particle size by x (μm), the graphite material satisfies the following formula (II):

$$y \leq 42x^{-0.6} \quad (4 \leq x \leq 30,\ 0.1 \leq y \leq 20) \quad \text{(II)}$$

(b) in Raman spectroscopic analysis using argon ion laser light with a wavelength of 5,145 A, the ratio of the strength of the peak existing in the region of 1,350-1,370 cm^{-1} (IB) to the strength of the peak existing in the region of 1,570-1,620 cm^{-1}, which is represented by an R value (IB/IA), is 0.001 to 0.2.

In the present invention, it is essential for the material to conform to the above formula (II), and batteries complying with those requirements provide excellent first cycle efficiency, doping capacity, undoping capacity, capacity at 2.8 mA/cm^2 and capacity at 5.6 mA/cm^2.

For example, as indicated in the specification, Comparing Example 11 (satisfying the formula (II)[1]) with Comparative Example 7 (not satisfying the formula (II)[2]) in the present invention, it is clear that the lithium ion secondary battery using the graphite satisfying the formula (II) is excellent in Doping capacity, Undoping capacity, Capacity at 2.8 mA/cm^2 and Capacity at 5.6 mA/cm^2, whereas those from Comparative Example 7 are clearly and substantially inferior in those crucial attributes. See Table 3, last two columns, on page 35 of the application as filed.

The cited references do not disclose or suggest the use of materials meeting the claimed recitations. In Fauteux, Omaru '005, Omaru '575, and Yamada, a number of the KS series of graphites were used as a graphitic anodes for a secondary lithium battery.

Attached hereto is a declaration of Dr. Hideharu Sato, in which he reports that he measured the average particle sizes and specific surface areas of LONZA KS series graphites disclosed in the prior art references relied upon in the Office Action. The results of Dr. Sato's measurements, and also the comparison with the Equation (II) of the present case, are shown in Table 1 below.

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[1] Average particle size 24.0 μm, Specific Surface area 5.0 m^2/g.
[2] Average particle size 18.0 μm, Specific Surface area 10.3 m^2/g.

Table 1

Kind of Graphite	Average Particle Size :**x** (μm)	Specific Surface Area: **y** (m^2/g)	Value of the right side of Formula (II): $42x^{-0.6}$	Fomula (II) $Y \leq 42x^{-0.6}$
LONZA KS-6	4.9([3])	22.0	16.2	**Not** satisfied
LONZA KS-15	8.0	13.5	12.1	**Not** satisfied
LONZA KS-25	10.1	11.9	10.5	**Not** satisfied
LONZA KS-44	17.5	9.2	7.5	**Not** satisfied
LONZA KS-75	23.7	7.2	6.3	**Not** satisfied

As seen from Table 1, **none** of LONZA KS series of graphites satisfied formula (II) as disclosed and claimed herein. Moreover nothing in the prior art discloses or suggests using graphite materials which satisfy formula (II). As seen from Declaration, the relationship of particle size and specific surface area of LONZA KS graphite (upper curve) is completely different from that in Example of the present invention (lower curve).

Likewise, the prior art did not disclose any systems which inherently met the limitations of formula (II). Therefore, none of the prior art references anticipated the invention of the present claims, and the § 102 rejections should be withdrawn.

Further, nothing in the prior art discloses or suggests that secondary lithium batteries having the graphitic anode satisfying the above formula (II) will provide excellent first cycle efficiency, doping capacity, undoping capacity, capacity at 2.8 mA/cm2 and capacity at 5.6 mA/cm2. Further, in the all cited references, since the commercial graphites (LONZA KS-6, KS-15, KS-25, KS-44 and KS-75) which do not

[3] Note that Table 1, Col. 3 of the '392 patent lists the"Mean Vol. Diameter" of KS-6 as 3.34. Even if that were the same as the average particle size (x), the material would still not meet the requirements of Formula (II).

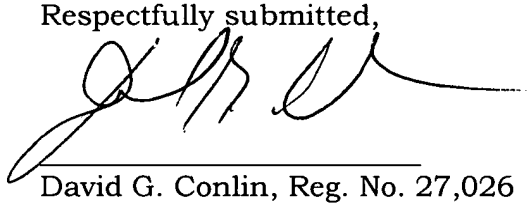
satisfy the above formula (II) were used, there was no intention disclosed that the graphite satisfying the above formula (II) could or should be used for an anode in a secondary battery. It is unnecessary to determine the R values of the Lonza materials, since they are clearly different from the materials of the present invention.

Therefore, it would not have been obvious from any combination of the references to one of the ordinary skill in this art to design a secondary lithium battery having the graphitic anode satisfying the characteristics of the present claims, or obtain the technical advantages of such a design.

Accordingly, the present invention would not have been obvious from the cited references at the time it was made.

The undersigned would appreciate an opportunity to discuss the above case with the examiner, and to try to answer any questions the Examiner may have. If the undersigned can be of any assistance in expediting the prosecution of this case, the Examiner is requested to call the undersigned, at the number given below.

Respectfully submitted,



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